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EXAMINER

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PATENT PAPER NUMBER

2

134
DATE MAILED

07/29/91

This is a communication concerning a signed application filed with the
COMMISSIONER OF PATENTS AND TRADEMARKS

This application has been examined Responsive to communication filed on _____ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. Notice of References Cited by Examiner, PTO-892.
2. Notice re Patent Drawing, PTO-948.
3. Notice of Art Cited by Applicant, PTO-1449.
4. Notice of Informal Patent Application, Form PTO-152
5. Information on How to Effect Drawing Changes, PTO-1474.
6. _____

Part II SUMMARY OF ACTION

1. Claims 1-6 are pending in the application.
2. Claims _____ have been cancelled.
3. Claims _____ are allowed.
4. Claims 1-6 are rejected.
5. Claims _____ are objected to.
6. Claims _____ are subject to restriction or election requirement.
7. This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. Formal drawings are required in response to this Office action.
9. The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are acceptable; not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been approved by the examiner; disapproved by the examiner (see explanation).
11. The proposed drawing correction, filed _____, has been approved; disapproved (see explanation).
12. Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has been received not been received been filed in parent application, serial no. _____; filed on _____.
13. Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. Other

EXAMINER'S ACTION

Art Unit 134

15.) The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or
on sale in this country, more than one year prior to the date of application for patent in the United States.

16.) Claims 1-4 are rejected under 35 U.S.C. § 102(b) as being anticipated by Horioka et. al.

Horioka et. al. disclose a photo-CVD of a SiO₂ layer on a semiconductor substrate using a laser to activate a TEOS reactive gas. This is discussed in the abstract.

17.) The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Art Unit 134

18.) Claims 5-6 are rejected under 35 U.S.C. § 103 as being unpatentable over the reference as applied in paragraph 16 above further in view of Shigetomi and either Benzing or Hayes et. al., or Tashiro et. al., or Van Mastrigt.

Shigetomi discloses that it is desirable to plasma clean the window through which light passes in a photo-CVD reactor when the ability to transmit light through the window down onto the substrate to be CVD coated in the reactor begins to become significantly impaired. The photo-CVD deposition and plasma cleaning of a Si deposit is specifically mentioned. This is shown and discussed in the abstract.

Benzing and Van Mastrigt both disclose the NF₃ plasma cleaning of a CVD reactor of residual SiO₂ material left in the CVD reactor from a prior coating run. This is described in columns 1-20 of Benzing and columns 1-6 of Van Mastrigt.

Tashiro et. al. disclose the NF₃ plasma cleaning of a photo-CVD reactor of residual SiO₂ material left in the CVD reactor from a prior coating run. This is described in columns 1-8.

Hayes et. al. disclose the NF₃ plasma cleaning of a CVD reactor of material left in the CVD reactor from a prior coating run. This is discussed in columns 1-10.

It would be obvious to one skilled in the art to employ any of the past NF₃ plasma cleaning procedures disclosed by either Benzing or Hayes et. al. or Tashiro et. al. or Van Mastrigt in

the photo-CVD deposition process disclosed by Horioka et. al. to clean up residual SiO₂ material deposited in the CVD reactors from a prior coating run based on the following. First, both

plasma etch residual material left on the window through which light passes in a photo-CVD reactor when the quality of transmission of light through the window down onto the substrate becomes significantly impaired. Second, Benzing, Hayes et. al., Tashiro et. al., and Van Mastrigt all teach that it is desirable to NF₃ plasma etch residual material from prior coating runs which can flake off the interior of the CVD reactor during subsequent runs contaminating parts processed in later runs.

19.) Hiura and Yano et. al. are cited of interest to the applicant.

Hiura and Yano et. al. respectively disclose the photo-CVD and plasma-CVD of a SiO₂ layer on a semiconductor substrate from a TEOS reactive gas.

20.) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner George A. Goudreau whose telephone number is (703)-308-1915.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist

Serial No. 702492

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Art Unit 134

whose telephone number is (703)-308-0651.

George A. Goudreau
George A. Goudreau
Examiner (Art Unit 134)

D. A. S.
DAVID A. SIMMONS
SUPERVISORY PATENT EXAMINER
ART UNIT 124